

What is claimed is:

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1. An objective lens device comprising three lenses wherein:  
a first of the three lenses has a negative power and is formed of a material having an Abbe number which is 45 or less in line d, and  
at least one surface of surfaces of the three lenses is aspherical.
  2. The device as claimed in claim 1, wherein a second of the three lenses has a positive power and the first lens is combined with the second lens to be a doublet so that a structure of the objective lens device is formed in two groups of lenses.
  3. The device as claimed in claim 1, wherein a numerical aperture of the device is 0.70 or more.
  - Sub A  
4. The device as claimed in claim 1, wherein the first lens [having a negative power] is formed of glass or plastic.
  5. The device as claimed in claim 1, wherein:  
second and third lenses of the three lenses have a positive power, and  
the first lens is disposed between the second and third lenses.
  6. The device as claimed in claim 2, wherein a third of the three lenses has a positive power and the first lens is disposed between the second and third lenses.
  - Sub A  
7. The device as claimed in claim 3, wherein second and third of the three lenses have a positive power and the first lens is disposed between the second and third lenses.
  8. The device as claimed in claim 4, wherein second and third of the three lenses have a positive power and the first lens is disposed between the second and third lenses.
  9. The device as claimed in claim 5, wherein, where a focal distance of the first lens is  $f_n$  and an overall focal length of the objective lens device is  $f$ , the objective lens device satisfies the equation:

$$-2.4 < \frac{f_n}{f} < -1.4.$$

10. The device as claimed in claim 6, wherein, where a focal distance of the first lens is  $f_n$  and an overall focal length of the objective lens device is  $f$ , the objective lens device satisfies the equation:

$$-2.4 < \frac{f_n}{f} < -1.4.$$

11. The device as claimed in claim 7, wherein, where a focal distance of the first lens is  $f_n$  and an overall focal length of the objective lens device is  $f$ , the objective lens device satisfies the equation:

$$-2.4 < \frac{f_n}{f} < -1.4.$$

12. The device as claimed in claim 8, wherein, where a focal distance of the first lens is  $f_n$  and an overall focal length of the objective lens device is  $f$ , the objective lens device satisfies the equation:

$$-2.4 < \frac{f_n}{f} < -1.4.$$

13. The device as claimed in claim 1, wherein, where a focal length of the first lens is  $f_n$  and an overall focal length of the objective lens device is  $f$ , the objective lens device satisfies the equation:

$$-2.4 < \frac{f_n}{f} < -1.4.$$

14. The device as claimed in claim 2, wherein, where a focal length of the first lens is  $f_n$  and an overall focal length of the objective lens device is  $f$ , the objective lens device satisfies the equation:

$$-2.4 < \frac{f_n}{f} < -1.4.$$

15. The device as claimed in claim 3, wherein, where a focal length of the first lens is  $f_n$  and an overall focal length of the objective lens device is  $f$ , the objective lens device satisfies the equation:

$$-2.4 < \frac{f_n}{f} < -1.4.$$

16. The device as claimed in claim 4, wherein, where a focal length of the first lens is  $f_n$  and an overall focal length of the objective lens device is  $f$ , the objective lens device satisfies the equation:

$$-2.4 < \frac{f_n}{f} < -1.4.$$

17. An optical pickup comprising:  
a light source which emits light;  
an objective lens device which focuses the light emitted from the light source into a light spot formed on a recording medium, the objective lens device comprising three lenses, wherein:

a first of the three lenses has a negative power and is formed of a material having an Abbe number which is 45 or less in line d, and

at least one surface of surfaces of the three lenses is aspherical;

an optical path changer which changes a proceeding path of incident light, the optical path changer arranged on an optical path between the light source and the objective lens device; and

a photodetector which receives light reflected by the recording medium and via the objective lens device and the optical path changer.

18. The optical pickup as claimed in claim 17, wherein a second of the three lenses has a positive power and the first lens is combined with the second lens to be a doublet.

19. The optical pickup as claimed in claim 17, wherein the light source emits light having a wavelength in a range including 400 and 420 nm and the objective lens device has a numerical aperture which is 0.70 or more.

20. The optical pickup as claimed in claim 17, wherein the first lens is formed of glass or plastic.

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21. The optical pickup as claimed in claim 17, wherein second and third of the three lenses have a positive power and the first lens is disposed between the second and third lenses.

22. The optical pickup as claimed in claim 18, wherein a third of the three lenses has a positive power and the first lens is disposed between the second and third lenses.

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23. The optical pickup as claimed in claim 19, wherein second and third of the three lenses have a positive power and the first lens is disposed between the second and third lenses.

24. The optical pickup as claimed in claim 20, wherein the second and third of the three lenses have a positive power and the first lens is disposed between the second and third lenses.

25. The optical pickup as claimed in claim 21, wherein, where a focal length of the first lens is  $f_n$  and an overall focal length of the objective lens device is  $f$ , the objective lens device satisfies the equation:

$$-2.4 < \frac{f_n}{f} < -1.4.$$

26. The optical pickup as claimed in claim 22, wherein, where a focal length of the first lens is  $f_n$  and an overall focal length of the objective lens device is  $f$ , the objective lens device satisfies the equation:

$$-2.4 < \frac{f_n}{f} < -1.4.$$

27. The optical pickup as claimed in claim 23, wherein, where a focal length of the first lens is  $f_n$  and an overall focal length of the objective lens device is  $f$ , the objective lens device satisfies the equation:

$$-2.4 < \frac{f_n}{f} < -1.4.$$

28. The optical pickup as claimed in claim 24, wherein, where a focal length of the first lens having a negative power is  $f_n$  and an overall focal length of the objective lens device is  $f$ , the objective lens device satisfies the equation:

$$-2.4 < \frac{f_n}{f} < -1.4.$$

29. The optical pickup as claimed in claim 17, wherein, where a focal length of the first lens is  $f_n$  and an overall focal length of the objective lens device is  $f$ , the objective lens device satisfies the equation:

$$-2.4 < \frac{f_n}{f} < -1.4.$$

30. The optical pickup as claimed in claim 18, wherein, where a focal length of the first lens is  $f_n$  and an overall focal length of the objective lens device is  $f$ , the objective lens device satisfies the equation:

$$-2.4 < \frac{f_n}{f} < -1.4.$$

31. The optical pickup as claimed in claim 19, wherein, where a focal length of the first lens is  $f_n$  and an overall focal length of the objective lens device is  $f$ , the objective lens device satisfies the equation:

$$-2.4 < \frac{f_n}{f} < -1.4.$$

32. The optical pickup as claimed in claim 20, wherein, where a focal length of the first lens is  $f_n$  and an overall focal length of the objective lens device is  $f$ , the objective lens device satisfies the equation:

$$-2.4 < \frac{f_n}{f} < -1.4.$$

33. The optical pickup as claimed in claim 17, wherein the Abbe number of the material of the first lens is in a range including 27.5 and 31.2.

34. The optical pickup as claimed in claim 17, wherein the Abbe number of the material of the first lens is 35 or less.

35. The optical pickup as claimed in claim 21, wherein the aspherical surface is formed on one of the second and third lenses.

36. An optical pickup for recording/reproducing information to/from a recording medium, the optical pickup comprising:  
a light source which emits light;  
a photodetector; and

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an optical system which communicates the emitted light to the recording medium and communicates light reflected by the recording medium to the photodetector, the optical system comprising:

an objective lens device which forms the emitted light into a light spot on the recording medium, the objective lens device comprising first, second and third lenses, wherein:

the first lens has a negative power and is formed of a material having an Abbe number which is 45 or less in line d,  
the second and third lenses have a positive power,  
one of the second and third lenses is aspherical, and  
the first lens is disposed between the second and third lenses on an optical path between the light source and the recording medium.

37. The optical pickup as claimed in claim 36, wherein the first lens and the second lens are arranged to form a doublet.

38. The optical pickup as claimed in claim 36, wherein the Abbe number is in a range of 35 or less.

39. The optical pickup as claimed in claim 36, wherein the Abbe number is in a range including 27.5 and 31.2.

40. The optical pickup as claimed in claim 36, wherein the Abbe number is in a range including 27.5 and 31.2.

41. The optical pickup as claimed in claim 36, wherein the light source emits light having a wavelength in a range including 400 and 420 nm.

42. An optical pickup for recording/reproducing information to/from a recording medium, the optical pickup comprising:

a light source which emits light;

a photodetector; and

an objective lens device which forms the emitted light as a spot on the recording medium and communicates light reflected by the recording medium toward the photodetector, the objective lens device comprising:

a first lens having a negative power and formed of a material having an Abbe number which is 45 or less in line d,

lens, and

a third lens having a positive power, wherein one of the second and third lenses is spherical, and

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|  | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 | 2050 | 2051 | 2052 | 2053 | 2054 | 2055 | 2056 | 2057 | 2058 | 2059 | 2060 | 2061 | 2062 | 2063 | 2064 | 2065 | 2066 | 2067 | 2068 | 2069 | 2070 | 2071 | 2072 | 2073 | 2074 | 2075 | 2076 | 2077 | 2078 | 2079 | 2080 | 2081 | 2082 | 2083 | 2084 | 2085 | 2086 | 2087 | 2088 | 2089 | 2090 | 2091 | 2092 | 2093 | 2094 | 2095 | 2096 | 2097 | 2098 | 2099 | 2100 | 2101 | 2102 | 2103 | 2104 | 2105 | 2106 | 2107 | 2108 | 2109 | 2110 | 2111 | 2112 | 2113 | 2114 | 2115 | 2116 | 2117 | 2118 | 2119 | 2120 | 2121 | 2122 | 2123 | 2124 | 2125 | 2126 | 2127 | 2128 | 2129 | 2130 | 2131 | 2132 | 2133 | 2134 | 2135 | 2136 | 2137 | 2138 | 2139 | 2140 | 2141 | 2142 | 2143 | 2144 | 2145 | 2146 | 2147 | 2148 | 2149 | 2150 | 2151 | 2152 | 2153 | 2154 | 2155 | 2156 | 2157 | 2158 | 2159 | 2160 | 2161 | 2162 | 2163 | 2164 | 2165 | 2166 | 2167 | 2168 | 2169 | 2170 | 2171 | 2172 | 2173 | 2174 | 2175 | 2176 | 2177 | 2178 | 2179 | 2180 | 2181 | 2182 | 2183 | 2184 | 2185 | 2186 | 2187 | 2188 | 2189 | 2190 | 2191 | 2192 | 2193 | 2194 | 2195 | 2196 | 2197 | 2198 | 2199 | 2200 | 2201 | 2202 | 2203 | 2204 | 2205 | 2206 | 2207 | 2208 | 2209 | 2210 | 2211 | 2212 | 2213 | 2214 | 2215 | 2216 | 2217 | 2218 | 2219 | 2220 | 2221 | 2222 | 2223 | 2224 | 2225 | 2226 | 2227 | 2228 | 2229 | 2230 | 2231 | 2232 | 2233 | 2234 | 2235 | 2236 | 2237 | 2238 | 2239 | 2240 | 2241 | 2242 | 2243 | 2244 | 2245 | 2246 | 2247 | 2248 | 2249 | 2250 | 2251 | 2252 | 2253 | 2254 | 2255 | 2256 | 2257 | 2258 | 2259 | 2260 | 2261 | 2262 | 2263 | 2264 | 2265 | 2266 | 2267 | 2268 | 2269 | 2270 | 2271 | 2272 | 2273 | 2274 | 2275 | 2276 | 2277 | 2278 | 2279 | 2280 | 2281 | 2282 | 2283 | 2284 | 2285 | 2286 | 2287 | 2288 | 2289 | 2290 | 2291 | 2292 | 2293 | 2294 | 2295 | 2296 | 2297 | 2298 | 2299 | 2300 | 2301 | 2302 | 2303 | 2304 | 2305 | 2306 | 2307 | 2308 | 2309 | 2310 | 2311 | 2312 | 2313 | 2314 | 2315 | 2316 | 2317 | 2318 | 2319 | 2320 | 2321 | 2322 | 2323 | 2324 | 2325 | 2326 | 2327 | 2328 | 2329 | 2330 | 2331 | 2332 | 2333 | 2334 | 2335 | 2336 | 2337 | 2338 | 2339 | 2340 | 2341 | 2342 | 2343 | 2344 | 2345 | 2346 | 2347 | 2348 | 2349 | 2350 | 2351 | 2352 | 2353 | 2354 | 2355 | 2356 | 2357 | 2358 | 2359 | 2360 | 2361 | 2362 | 2363 | 2364 | 2365 | 2366 | 2367 | 2368 | 2369 | 2370 | 2371 | 2372 | 2373 | 2374 | 2375 | 2376 | 2377 | 2378 | 2379 | 2380 | 2381 | 2382 | 2383 | 2384 | 2385 | 2386 | 2387 | 2388 | 2389 | 2390 | 2391 | 2392 | 2393 | 2394 | 2395 | 2396 | 2397 | 2398 | 2399 | 2400 | 2401 | 2402 | 2403 | 2404 | 2405 | 2406 | 2407 | 2408 | 2409 | 2410 | 2411 | 2412 | 2413 | 2414 | 2415 | 2416 | 2417 | 2418 | 2419 | 2420 | 2421 | 2422 | 2423 | 2424 | 2425 | 2426 | 2427 | 2428 | 2429 | 2430 | 2431 | 2432 | 2433 | 2434 | 2435 | 2436 | 2437 | 2438 | 2439 | 2440 | 2441 | 2442 | 2 |
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